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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/614,369	07/12/2000	David Mun-Hien Choy	AM9-99-0209	2248

7590

11/08/2002

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EXAMINER

WOO, ISAAC M

ART UNIT PAPER NUMBER

2172

DATE MAILED: 11/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/614,369

Applicant(s)

CHOY ET AL.

Examiner

Isaac M Woo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 August 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### DETAILED ACTION

1. This action is in response to Applicant's arguments, filed on August 22, 2002 have been considered but are deemed moot in view of new ground of rejections below. The pending claims are 1-19 based upon claim renumbering.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vijaykumar (U.S. Patent No. 5,745,896) in view of Sarkar (U.S. Patent No. 6,012,067).

With respect to claim 1, Vijaykumar discloses, RDBMS (col. 3, lines 44-25) providing referential integrity (col. 3, lines 26-62, col. 9, lines 34-67) for homogenous links, see (FIG. 1C, col. 7, lines 10-67 to col. 8, lines 1-57, Note: the "homogeneous link" defined by applicant in specification (page 1, lines 17-1 to page 2, line 1) that all links point to tuples in a single predetermined target table. And Vijaykumar (180, index,

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FIG.1C) points to the single predetermined database table (170, FIG. 1C). Vijaykumar does not explicitly disclose the software layer on top of the RDBMS for causing the RDBMS to provide referential integrity for heterogeneous link. However, Sarkar discloses the software layer on top of the RDBMS (col. 1, lines 5-49) for causing the RDBMS to provide referential integrity (FIG. 5, col. 10, lines 7-29) for heterogeneous link, (col. 3, lines 46-67 to col. 4, lines 1-14), see (col. 1, lines 5-49, col. 5, lines 6-67 to col. 6, lines 1-9). The heterogeneous links that point to a target table representing another particular type of document, (i.e., image, from applicant's specification on page 2, lines 1-14), as defined by applicant. Sarkar teaches the relational database management provides referential integrity for heterogeneous links (i.e., links to heterogeneous data objects i.e., text, audio, video, image, col. 5, lines 6-67). Therefore, it would have been obvious a person having ordinary skill in the art to combined the system of Vijaykumar with that of Sarkar to include the software layer on top of the RDBMS for causing the RDBMS to provide referential integrity for heterogeneous links. The referential integrity provides correct dependency relationship in relational database management system, which can avoid dangling point and the heterogeneous links to point different types of data between databases, which can provides and stores huge different types of data. Thus, it would be beneficial to use the referential integrity for heterogeneous links to maintain data dependencies and handle huge different types of data.

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With respect to claim 2, Vijaykumar discloses that the software layer maintains at least one table, see (FIG. 1C, col. 7, lines 9-59).

With respect to claims 3 and 18, Vijaykumar discloses that the table is accessed upon an attempted deletion or updating of a tuple references by a link, and the attempted deletion or updating is selectively disallowed base on the table, see (col. 3, lines 16-67).

With respect to claims 4 and 19, Vijaykumar discloses that the software layer includes at least one stored procedure accessible by an application to insert, update, or delete a tuple while ensuring referential integrity in heterogeneous links associated with the tuple, see (col. 3, lines 16-67, col. 14, lines 11-32, col. 15, lines 65-667 to col. 16, lines 1-32).

With respect to claim 15, Vijaykumar discloses, RDBMS (col. 3, lines 44-25) providing referential integrity (col. 3, lines 26-62, col. 9, lines 34-67) for homogenous links, see (FIG. 1C, col. 7, lines 10-67 to col. 8, lines 1-57, Note: the "homogeneous link" defined by applicant in specification (page 1, lines 17-1 to page 2, line 1) that all links point to tuples in a single predetermined target table. Vijaykumar discloses RDBMS , see (col. 3, lines 16-62). Vijaykumar does not explicitly disclose software ware layer on top of the RDBMS for causing RDBMS to support triggers. However, Sakar discloses that database schema provides triggers, see (col. 11, lines 26-65, col. 3, lines

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46-67). Therefore, it would have been obvious a person having ordinary skill in the art to include that the RDBMS supports triggers. The action causes the automatic invocation of a procedure by trigger, for instance to preserve referential integrity. A triggers goes into effect when a user attempts to modify data with an insert, delete, or update command. A trigger can instruct the system to take any number of actions when a specified change is attempted. By preventing incorrect, unauthorized, or inconsistent changes to data, triggers help maintain the integrity of the database. Thus, it would be beneficial to use a trigger to keep the integrity of the database.

With respect to claim 16, Sarkar discloses that the software layer maintains at least one table and establishes at least one trigger, see (col. 3, lines 46-67).

With respect to claim 17, Sarkar discloses that the software layer establishes at least one of: a delete trigger, and an update trigger, see (col. 7, lines 10-67 to col. 8, lines 1-67 to col. 9, lines 1-31).

3. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarkar (U.S. Patent No. 6,012,067).

With respect to claim 5, Sarkar discloses, providing at least one table (FIG. 3, FIG. 4, FIG. 5, FIG. 7, col. 9, lines 31-67 to col. 10, lines 1-30, col. 10, lines 46-61), at least one table having scoped link column (FIG. 2, col. 7, lines 10-67 to col. 8, lines 1-

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64, FIG. 7, col. 10, lines 46-61), the table being associated with the scoped link column, see (FIG. 7, col. 10, lines 46-61); and

accessing the table to ensure referential integrity in an RDBMS, see (FIG.5, col. 10, lines 7-30). Sarkar does not explicitly disclose heterogeneously scoped link (HSL) table and heterogeneously scoped link column. However, Sarkar teaches all the Table column E (heterogeneously scoped link column) point to different data type (any objects, i.e., image, text, ...) from the FIG. 2, and FIG. 7 which shows the Table S has heterogeneous (image, text,...) links. Therefore, it would have been obvious a person having ordinary skill in the art to include the heterogeneously scoped link (HSL) and heterogeneously scoped link column into the system of Sarkar to provide any kind of data. The heterogeneously scoped link can provide huge different data types logically, which improve the management for RDBMS.

With respect to claim 6, Sarkar discloses that the HSL table is accessed when a link attribute is sought to be changed, see (FIG. 2, col. 7, lines 10-67 to col. 8, lines 1-67 to col. 9, lines 1-31).

With respect to claim 7, Sarkar discloses that the HSL table is accessed when a tuple is sought to be changed or deleted, see (FIG. 2, col. 7, lines 10-67 to col. 8, lines 1-67 to col. 9, lines 1-31).

With respect to claim 8, Sarkar discloses that the HSL table is established by an RI table, see (FIG. 5, col. 10, lines 7-29).

With respect to claim 9, Sarkar discloses that at least one trigger useful in selectively disallowing operations, see (col. 10, lines 46-62).

With respect to claim 10, Sarkar discloses that at least one procedure accessible by an application to insert, update, or delete a tuple while ensuring referential integrity in heterogeneous links associated with the tuple, see (col. 10, lines 7-62, col. 7, lines 10-67 to col. 8, lines 1-38).

With respect to claim 11, Sarkar discloses the computer program product including computer usable code means programmed with logic for ensuring referential integrity in an RDBMS (col. 1, lines 6-67 to col. 2, lines 1-67) having at least one column, computer readable code means for maintaining a tables, see (FIG. 2, FIG. 7, col. 7, lines 10-67 to col. 8, lines 1-67 to col. 9, lines 1-31); and computer readable code means for using thee table to ensure that operations on tuples (FIG. 2, FIG. 7, col. 7, lines 10-67 to col. 8, lines 1-67 to col. 9, lines 1-31). Sarkar does not explicitly disclose the operation on tuples do not result in a heterogeneous scoped link pointing to no tuple. However, Sarkar teaches the referential integrity which means that the referential integrity has no dangling pointer (pointing to no tuple), see (col. 10, lines 7-62). The reference that doesn't actually lead anywhere is dangling point (pointing



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no tuple) In C and some other languages, a pointer that doesn't actually point at anything valid. Therefore, it would have been obvious a person having ordinary skill in the art to include the operation on tuples do not result in a heterogeneous scoped link pointing to no tuple into the system of Sarkar. A data dependency that must remain true for a database to preserve integrity. The data dependency are specified at database creation time and enforced by the database management system. Thus, referential integrity provides no dangling point (pointing to no tuple), which improves database management.

With respect to claim 12, Sarkar discloses that the computer readable code means for establishing at least one trigger useful in cooperation with the table for selectively disallowing operations, see (col. 3, lines 45-67 to col. 4, lines 1-65).

With respect to claim 13, Sarkar discloses that the computer readable code means for establishing at least one trigger; delete trigger, ad an update trigger, see (col. 10, lines 7-61).

With respect to claim 14, Sarkar discloses that the computer readable code means for inserting, updating, or deleting a tuple while ensuring referential integrity in heterogeneous links associated with the tuple, see (col. 7, 8, col. 10, lines 7-61).

**Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Carhart et al (U.S. Patent No. 5,511,186) discloses the system for searching data with combination of multiple databases.

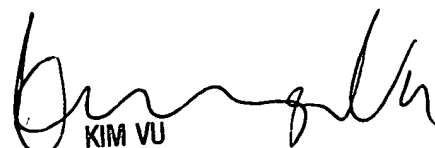
Kogan et al discloses the system for searching data in multiple regions of databases.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isaac M Woo whose telephone number is (703) 305-0081. The examiner can normally be reached on 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y Vu can be reached on (703) 305-4393. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 308-6606 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

IMW  
November 1, 2002

  
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